

THE EARLY STAGES OF *PARORNIX CARPINELLA*
(FREY) AND *P. FAGIVORA* (FREY)
(LEPIDOPTERA: GRACILLARIIDAE)

By A. M. EMMET*

In an earlier paper (Emmet, 1986) I introduced *P. carpinella* as a species new to the British list and asked microlepidopterists to help to find out if there were differences from *P. fagivora* in the early stages, wing pattern and genitalia. The present paper provides some of the answers. I pointed out that both species were very local and occurred at low density where found, and this was confirmed by my experience during late September and October, 1986. It required sixteen man-hours of searching in a known locality to procure four apparently healthy larvae of *P. carpinella* and eight hours for a single *P. fagivora*. The former were from Chalkney Wood, about seven miles west of Colchester in north Essex; the latter from Ellenden Wood Nature Reserve, east Kent, with kind permission from the Kent Trust for Nature Conservation. However, in addition to the larvae I obtained over a dozen vacated or aborted feedings of *P. carpinella* and I already had over twenty pressed leaves showing the feeding of *P. fagivora* collected from Ellenden Wood when I was working on the text for MBGBI Volume 2.

The pupae were brought indoors on the 19th January, after lying under snow for a week. A male and female *P. carpinella* emerged on 10th February followed by a parasite, and a female *P. fagivora* on 11th March. I propose to describe the early stages of *P. carpinella* in full but of *P. fagivora* only so as to indicate the differences, the most important of which are highlighted by the use of italics.

P. carpinella

OVUM. Laid on the underside of a leaf of hornbeam (*Carpinus betula*).

LARVA. Head pale yellowish brown with *four* posterior black spots in a transverse row. Body pale greenish grey, integument glossy; gut purplish or greyish; prothoracic plate with a transverse row of *four conspicuous* black spots, larger than those on head; leg pale brown with a broad *black* band on each segment.

Feeding starts in a *relatively straight* gallery in the lower epidermis, with a central line of *greenish black* frass adhering to the cuticle. This is expanded into a blotch which *seldom absorbs the earlier gallery*. The blotch is usually *elongate* between veins, measuring *c.* 12 x 3mm, but one mine was found which was more or less square. During the tissue-feeding phase the frass at first collects

*Labrey Cottage, Victoria Gardens, Saffron Walden, Essex, CB11 3AF.

round the margins of the mine; the larva at this time is lightly covering the lower epidermis with silk and transports some of these grains in its mouth and incorporates them into its spinning. The silk contracts, drawing the sides together to form a *distinctly 'inflated' tube with a strong central crease and numerous smaller parallel creases*. The epidermis is mottled by the greenish black frass and this readily distinguished the mine from that of *Phyllonorycter tenerella* (Joannis) which is unspotted. All the parenchyma is consumed but the nervures remain uneaten, giving the upper epidermis a reticulate appearance. After the spinning phase is over, the now black frass is *stacked at one end of the mine*.

After leaving its mine, the larva folds the edge of a leaf, often the same leaf, downwards to form a pocket *c.* 15mm long, within which it eats through to the upper epidermis, leaving the veins and irregular patches of parenchyma uneaten; the frass is deposited at one end of the fold. Two such folds are made, the second measuring *c.* 25mm in length; one of my larvae under observation made a third pocket but vacated it for pupation after the scantiest of feeding. The first fold in every example seen has been *close to the petiole*, and the second is often in the same position. Not infrequently the mine and both folds are on a single leaf. When full-fed, the larva spins an ochreous cocoon on the upperside margin of a leaf, drawing the edge over to conceal the cocoon; the leaf chosen may be the last one on which the larva fed.

PUPA. Pale brown; dorsum of each abdominal segment with irregular transverse rows of spines, decreasing in size from the anterior to posterior margin. There are about *25 spines in each anterior row*.

P. fagivora

OVUM. Laid on the underside of a leaf of beech (*Fagus sylvatica*).

LARVA. Head yellowish brown with *two* posterior dark spots. Body greenish white; gut dark green to purplish; prothoracic plate with a transverse row of rather *obscure* darker spots; leg almost concolorous with a *pale yellowish brown* band on each segment.

Feeding starts in a *contorted* gallery which is *usually absorbed by the subsequent blotch*. This is generally *subrectangular, little arched by spinning and almost without creases*. The frass, some of which marbles the lower cuticle, is at first *reddish*; later it is black and *collects round the margins of the mine*. After leaving the mine, the larva makes folds similar to those of *P. carpinella*, but the preferred position for the first fold is the *leaf-tip*. The cocoon is likewise similar, generally spun on the upper surface, although in the 1986 example it was on the underside.

PUPA. Differs from that of *P. carpinella* in having fewer but larger spines on the dorsal surface of the abdominal segments, numbering about *12 in each anterior row*.

The larvae are readily separable by the markings on the head and prothoracic plate, and by the legs which to the naked eye look wholly black in *P. carpinella* and colourless in *P. fagivora*. The differences noted in the feeding patterns are remarkably constant.

The adults may be determined by the labial palpus which is conspicuously black-banded in *P. carpinella* but immaculate or with the faintest possible external shading in *P. fagivora*. Both species may be separated from other *Parornix* by the ochreous tinge to the pale markings, but there seems to be no way of telling them apart on wing-pattern alone. The bred material at my disposal is still insufficient for figuring the genitalia since at least two of each sex of each species are needed for reliable comparison. Mr. Svensson has now studied the male genitalia in Sweden and informs me that he has found good distinguishing characters.

The vice-counties from which *P. carpinella* has been recorded are now 14, 15, 16, 18 and 19. East Sussex (VC14) is an addition, based on a specimen I took from a trunk of hornbeam at Abbots Wood on 11 May 1976 and have now identified from its labial palpi; I have also revisited the locality and confirmed that there is no beech in the vicinity. *Parornix* of this group captured amongst beeches in Kent localities where *P. fagivora* breeds all have immaculate palpi.

Reference

- Emmet, A. M., 1986. *Parornix carpinella* (Frey, 1863) a distinct species from *P. fagivora* (Frey, 1861) (Lep., Gracillariidae). *Entomologist's Rec. J. Var.* **98**: 144-146.

OECOPHORA BRACTELLA (LINNAEUS) (LEP.: OECOPHORIDAE)
SECOND DEVON LOCALITY. — I noted (1986, *Ent. Rec.* **98**: 61) the first specimen of this species for Devon. I wrongly stated that this was the fifth vice-county record in the British Isles. I am grateful to Dr. J. R. Langmaid for advising me that it was the seventh.

In 1986 I found *O. bractella* at a second Devon locality. Be-8th March and 19th April at Hembury Woods I found several larvae amongst slight webbing under the bark of dead oak branches. These produced adults between 17th April and 22nd May. The larvae seemed to occur only on branches of hard, not rotten, wood whose bark was fairly dry and easily removed by hand.

I am grateful to the National Trust who own the woods for granting me permission to record there. R. J. HECKFORD, 67, Newnham Road, Plympton, Plymouth.